

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for detecting a biochemical reactant comprising the steps of:

hybridizing a biochemical specimen with a nucleic acid probe on a biochip, the nucleic acid probe including a configuration of a loop structure and arrayed on one or more electrodes provided on a surface of a substrate or substrate analog or the nucleic acid probe with said configuration but further including a label modification added in advance with a label; and

detecting and/or discriminating a complex of the nucleic acid probe and the biochemical specimen, forming a double chain, by means of at least one of electrical, magnetic and optical changes on the surface of the biochip;

wherein the label is selected from the group consisting of fine metal particles, fine Si particles, magnetic particles, ceramic fine particles and semiconductors.

2. (Currently Amended) A method for detecting a biochemical reactant comprising the steps of:

hybridizing a biochemical specimen with a nucleic acid probe on a biochip, the nucleic acid probe including a configuration of a loop structure and arrayed on one or more electrodes provided on a surface of a substrate or substrate analog or the nucleic acid probe with said configuration but further including a label modification added in advance with a label;

modifying with a label either during or after hybridization one or both of the biochemical specimen and the probe nucleic acid forming a double chain; and

detecting and/or discriminating a complex of the probe nucleic acid and the biochemical specimen, forming a double chain, by means of at least one of electrical, magnetic and optical changes on the surface of the biochip;

wherein the label is selected from the group consisting of fine metal particles, fine Si particles, magnetic particles, ceramic fine particles and semiconductors.

3. (Currently Amended) A method for detecting a biochemical reactant comprising the steps of:

hybridizing a biochemical specimen modified in advance with a label with a nucleic acid probe on a biochip, the nucleic acid probe including a configuration of a loop structure and arrayed on one or two or more electrodes provided on a surface of a substrate or substrate analog or the nucleic acid probe with said configuration but further including a label modification added in advance with a label; and

detecting and/or discriminating a complex of the probe nucleic acid and the biochemical specimen, forming a double chain, by means of at least one of electrical, magnetic and optical changes on the surface of the biochip;

wherein the label is selected from the group consisting of fine metal particles, fine Si particles, magnetic particles, ceramic fine particles and semiconductors.

4. (Currently Amended) A method for detecting a biochemical reactant comprising the steps of:

hybridizing a biochemical specimen modified in advance with a label with a nucleic acid probe on a biochip, the nucleic acid probe including a configuration of a loop structure and arrayed on one or two or more electrodes provided on a surface of a substrate or substrate analog or the nucleic acid probe with said configuration but further including a label modification added in advance with a label;

modifying with a label either during or after hybridization one or both of the biochemical specimen and the probe nucleic acid forming a double chain; and

detecting and/or discriminating a complex of the probe nucleic acid the biochemical specimen, forming a double chain, by means of at least one of electrical, magnetic and optical changes on the surface of the biochip;

wherein the label is selected from the group consisting of fine metal particles, fine Si particles, magnetic particles, ceramic fine particles and semiconductors.

5. (Currently Amended) A The method according to any one of claims 1 through 4, wherein the detection and/or discrimination step includes comparing results obtained from measuring at least one of electrical, magnetic and optical changes to the surface of the biochip before the hybridization operation as a standard with results of the biochip following each step.

6. (Currently Amended) A The method for detecting a biochemical reactant according to any one of Claims 1 through 4, wherein the detection/discrimination step includes measuring, before and after the hybridization operation ~~and/or before and after the label modification operation~~, at least one of electrical, magnetic and optical changes to the surface of the biochip, and comparing these results.

7. (Currently Amended) A The method according to any one of claims 1 through 4, wherein the detection and/or discrimination step includes measuring, before the hybridization operation, at least one of electrical, magnetic and optical changes to the surface of a biochip having a plurality of electrodes, and relative amounts of the nucleic acids probe on each electrode are calculated in advance and used as a corrective reference for measured values after each step.

8. (Currently Amended) A The method according to any one of claims 1 through 4, wherein a pre-modification with a label of the nucleic acid probe or the biochemical specimen is a multi-stage modification of two or more stages in which a second label is added targeting a first label previously attached.

9. (Currently Amended) A The method according to any one of claims 1 through 4, wherein modifying the nucleic acid probe or the biochemical specimen with a label is a multi-stage

modification in two or more stages in which a modification with a first label is followed by a modification with a second label targeting the first label.

10. (Cancelled)

11. (Currently Amended) A The method according to any one of claims 1 through 4, wherein detecting and/or discriminating electrical changes on the surface of a biochip is at least one of changes in current values, voltage values or resistance values on a biochip or electrode, and changes in capacitance on the surface of a biochip.

12. (Currently Amended) The method according to any one of claims 1 through 4, wherein detecting and/or discriminating as electrical and magnetic changes on the surface of a biochip comprises the steps of:

detecting and/or discriminating at least one of changes in current values, voltage values or resistance values on a biochip or electrode, and changes in capacitance on the surface of a biochip; and

magnetically detecting and/or discriminating a signal from the complex forming a double chain.

13. (Currently Amended) A The method according to any one of claims 1 through 4, wherein detecting and/or discriminating as electrical and optical changes on the surface of a biochip comprises the steps of: detecting and/or discriminating at least one of changes in current values, voltage values or resistance values on a biochip or electrode and changes in capacitance on the surface of a biochip; and

optically detecting and/or discriminating a signal from the complex forming a double chain.

14. (Currently Amended) A The method according to any one of claims 1 through 4, wherein detecting and/or discriminating as electrical, magnetic and optical changes on the surface of a biochip comprises the steps of:

detecting and/or discriminating at least one of changes in current values, voltage values or resistance values on a biochip or electrode, and changes in capacitance on the surface of a biochip; and

magnetically and optically detecting and/or discriminating signals from the complex forming a double chain.

15-22. (Cancelled)

23. (New) The method according to claims 2 or 4, wherein the detection and/or discrimination step includes measuring, before and after the hybridization operation and/or before and after the modification operation, at least one of electrical, magnetic and optical changes to the surface of the biochip, and comparing these results.